TITLE:	**Types of Shielding Verifications**
***CATEGORY*:**	**Operations**
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REVIEW PERIOD:	**Annual**

ABSTRACT:

Type A: Shielding Verification for White Beam Enclosures

Included in this category are any new stations, previously tested stations after mitigation and new installation that changes the beamline configuration pertaining to Radiation Safety System components. Scheduling is performed at a BCRRT meeting in which all appropriate documentation is to be supplied by beamline personnel.

Conditions Prior to Survey:

- The UES group obtains all approvals and insures that all closures, tagging, stops, and system checks are complete.
- The Commissioning Team Leader (CCSM, or CCSM Assistant) conducts a walkthrough of the beamline.
- X-ray scatterers are installed inside the enclosure at pre-determined positions.
- Sealed flight tubes, ozone destruction units, ozone monitors, and vent fans are installed where necessary.
- The Health Physics (HP) technicians secure the commissioning area. Only authorized commissioning personnel are allowed inside the commissioning area.
- A valid Commissioning Activity Approval (CAA) form is posted for the activity.

Survey Conditions:

- The MCR stores 10 mA of current in the Storage Ring
  In the case of Insertion Device (ID) beamlines, the ID is closed its commissioning limit.
- Photon shutters are opened and radiation levels checked.
- HP technicians survey all areas to be tested. A survey of joints, seams, doors, panels, labyrinths, floors, walls, and the station roof is performed and the information obtained is recorded.
- When the testing is complete and the measurements are acceptable to the APS Assigned Health Physicist, the current level is raised to an amount less than 30 mA and the survey is repeated. If the measurements are not acceptable, the survey is stopped and mitigation is required.
- At the completion of the testing, the APS Assigned Health Physicist will issue a "Status After Shielding Verification" form to the UES group for posting within the beamline display cabinet. The form may range from an approval to "run with no restrictions" to "no beam allowed".

Type B: Verification for Mono/Pink Beam Enclosures in Parasitic Mode

Included in this category are new mono/pink beam stations and/or previously tested mono/pink stations after mitigation has been performed. A BCRRT meeting is necessary to discuss the conditions (including ID gap, target selection, etc.) of the survey.

Conditions Prior to Survey:

- Scheduling of this survey requires 48 hours notice to the UES group.
- The same pre-conditions as in Type A verification exist.

Survey Conditions:

- This survey is performed at a beam current greater than 80 mA.
- Target and ID gap conditions are pre-determined by the BCRRT committee.
- Install beam diagnostics (ion chamber, etc.) if not already provided by the beamline personnel.
- Tuning of the monochromator or mirror is required; this step may take some time to complete.
- Photon shutters are opened and radiation levels checked.
- HP technicians survey all areas to be tested. A survey of joints, seams, doors, panels, labyrinths, floors, walls, and the station roof is performed and the information obtained is recorded.
- At the completion of the testing, the APS Assigned Health Physicist will issue a "Status After Shielding Verification" form to the UES group for posting within the beamline display cabinet. The form may range from an approval to "run with no restrictions" to "no beam allowed".

Type C: Spot/routine Survey by Health Physics

Included in this category are new shutters or stops installed and integrated into the PSS, guillotines or collimators that have been reconfigured, or any minor mitigation that has been performed on the beamline or station shielding.

Conditions Prior to Survey:

- This survey will be arranged by the UES group, in consultation with the APS Assigned Health Physicist. A Configuration Control Work Permit is to be posted denoting the reason for the survey.
- Target and ID gap conditions to be determined by the APS Assigned Health Physicist prior to survey.

Survey Conditions:

- This survey is performed at greater than 80 mA at the pre-determined target and gap conditions.
- This survey is accomplished by having HP survey selected locations.
- Once the HP survey is complete and the results are acceptable, the work request shall be closed out by the APS Assigned Health Physicist (or by his designee) only.
- Beamline operations will be permitted only after the successful completion of the HP survey and acknowledgement by the APS Assigned Health Physicist (or his designee).